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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MENON, KRISHNAN S

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 08/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

mk-7

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/931,973	YAMADA, YOSUKE	
	<b>Examiner</b>	<b>Art Unit</b>	
	Krishnan S Menon	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 April 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

1. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Patent Abstracts of Japan JP 07 060074.

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JP (074) discloses a filter comprising hollow fibers bundled at one end and let loose at the other end to free-hang like a broom in the raw fluid to be filtered (item 7, fig); has fluid injection means (1, fig) providing agitation of the hollow fibers, the housing for the fiber bundle is a cylinder (item 6, Fig), the cylinder is vertical; and has a funnel in the bottom.

2. Claims 5 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Heine (US 6,126,819).

Heine (819) discloses a hollow fiber filter with one end bundled and the other end free like a broom (Fig 5, 7), has a funnel-shaped member (250-Fig 7), a recovery chamber in the lower side (down-stream) of filter, has a vertical cylindrical vessel as in claim 6 and the hollow fiber bundle is submerged in fluid in the cylinder, the raw water inlet is through the funnel member (all fig 5 and 7), and the fluid injection means is at a radial central position with respect to the fiber bundle (221, fig 5 and 6).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 7, 8/5, 8/7, 9/5, 9/7, 10/9/5, 10/9/7 (claim 10 dependent on multiple dependent claim 9 which depends on claim 5 or 7), 11/5 and 11/7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heine (US 6,126,819).

Heine (819) discloses a hollow fiber filter with one end bundled and the other end free like a broom (Fig 5, 7), the cylindrical vessel has a funnel shaped member (250-fig 7) in the bottom, the raw water inlet is through that funnel (all fig 5 and 7), the hollow fiber bundle is submerged in fluid in the cylinder, there is a fluid injection means axially opening at the fibers as in claim 9 (221, fig 5); and provision for back wash as in claim 7 (col 9:35-39). Heine (819) also discloses means for air injection along with the raw fluids and bubbling air as in claim 11 (col 9:15-35).

Heine (819) does not disclose a separate backwash chamber, the cylinder dia as 1.5 to 3 times the fiber bundle dia (claim 8), and the ejection port location at 1/3 to 2/3 of the bundle height (claim 10). It would be obvious to one of ordinary skill in the art at the time of invention that backwash could be accomplished with pressurizing the permeate as taught by Heine (819) and providing the backwash chamber as in claim 7 is just a matter of convenience in design. The precise location of the fluid ejection means is obvious to one of ordinary skill in the art as a matter of obtaining a good flow distribution, and Heine (819)'s teachings have alternate but equivalent means providing equivalent function. It would be obvious to one of ordinary skill in the art at the time of invention that the ratio of the cylinder dia to the bundle dia is a matter of design consideration depending on the volume flow rate through the cylinder and the hollow fiber flux and one of ordinary skill in the art at the time of invention could choose to provide them using standard engineering practice.

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2. Claims 8/2, 9/2, 10/9/2 (claim 10 depends on multiple dependent claim 9 which depends on claim 2), 11/1, 11/2, and 11/4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP(074) in view of Heine (819).

JP (074) discloses a filter comprising hollow fibers bundled at one end and let loose at the other end to free-hang like a broom in the raw fluid to be filtered (item 7, fig); has fluid injection means (1, fig) providing agitation of the hollow fibers, the housing for the finer bundle is a cylinder (item 6, Fig), the cylinder is vertical; and has a funnel in the bottom.

JP(074) does not disclose the cylinder dia as 1.5 to 3 times that of the bundle dia (claim 8), fluid injection means is a pipe opening at the bundles (claim 9), the ejection port at 1/3 to 2/3<sup>rd</sup> of the height of the bundle (claim 10) and fluid includes raw fluid and bubbling air (claim 11). Heine (819) teaches the bubbling of air with the raw fluid (col 9:15-35), and means for injecting fluid at the bundle (fig 5,7). It would be obvious to one of ordinary skill in the art at the time of invention to chose the teachings of Heine (819) in the filter as taught by JP(074) as alternate but equivalent product for equivalent function.

The precise location of the fluid ejection means is obvious to one of ordinary skill in the art at the time of invention as a matter of obtaining a good flow distribution, and Heine (819)'s teachings have alternate but equivalent means providing equivalent function. It would be obvious to one of ordinary skill in the art at the time of invention that the ratio of the cylinder dia to the bundle dia is a matter of design consideration depending on the volume flow rate through the cylinder and the hollow fiber flux, and one of ordinary skill in the art at the time of invention could provide them using standard engineering practice.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mahendran (US 5,910,250) discloses using aeration and scrubbing with air bubbles on the outside of the hollow fiber membrane, used as dead-end filter for filtering raw water, for cleaning and removing dirt build up on the membrane (fig 4). Japanese patent abstract JP 10192667 describes free-hanging hollow fibers in the form of a broom for dead-end filtration of raw fluids, with means for aeration to clean the hollow fibers. Semmens (US 5,674,433) discloses similar, one end free-hanging hollow fiber membrane for aeration of flowing streams, the hollow fibers being agitated with the flow of the fluid. Okumura (US 4,668,401) discloses one end free-hanging hollow fiber membrane for filtration of raw fluids, with the fluid flow agitating the membranes to keep them clean. Evans (US 5,989,431) has vertical cylindrical containers containing cell culture medium having hollow fiber membranes attached from bottom of the cylinder with free floating top ends, for filtering the medium from the cells by vacuum, the system having the conical arrangement in the bottom for capturing the filtrate. Raw water filtrations systems with hollow fiber membranes cleaned by air sparging is also disclosed by JP (64 1807)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

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Patent Examiner  
August 2, 2002

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